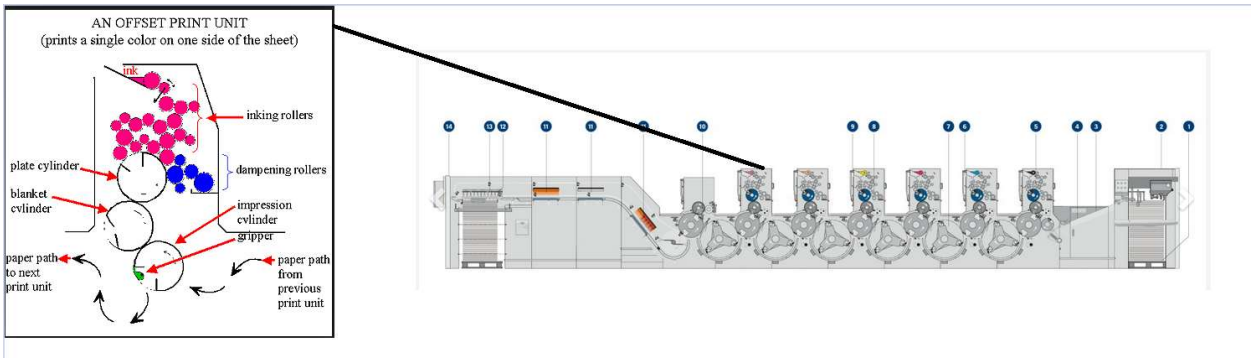
SMART PRINTING PRESS - MANUFACTURING

INTELLIGENT OFFSET MACHINE

Story

In an offset printing press like Heidelberg or of any make to get correct output while reproducing any image or advertisement is very difficult and involve lots of trial and error methods. This can be improved by quality and time frame with the application of IOT.



Parameter needs to be considered to reproduce exact color output

1) Temperature of Ink (C/M/Y/K) – No 5 in above picture
2) Viscosity/Tack of Ink – No 5 in above picture
3) Temperature of Water – No 8 in above picture
4) Water Hardness/pH value – No 8 in above picture
5) Paper property of coated/quality or uncoated – No 1 in above picture
6) Paper GSM/thickness – No 3 in above picture
7) Blanket cylinder to impression cylinder clearance/pressure – No 10 in above picture
8) Amount of powder sprayed for drying of print – No 11 in above picture
9) Temperature of drying chamber – No 11 in above picture

To reproduce a correct color output all above parameter needs to be monitored as well as trial and error method continuously needs to be carried out by machine operator to reproduce best quality color output. In the process of trial and error method lot of paper were wasted until all the above parameter were in control.

In the current machine format sensors were available to measure most of the above parameter but there is no such method to synchronize or control all this parameters at a time so that best quality print could obtained for short run job.

Once we get control on all the above parameter then we can control quality of printing jobs via SAP Leonardo IOT for those enterprise uses SAP ERP.

Actuator needs to be incorporated against all the above sensed data like

1) In case of temperature variation in the ink cylinder we can pass water with desired temperature to control ink temperature.
2) When new ink added with existing working ink in the duct at that point viscosity of ink varies with previous one hence it is required to mix ink in the duct with tack value exactly how it is for working ink in the duct.
3) Temperature of water can be maintained via water circulation method or attaching chiller with water tank.
4) Water pH value also plays a vital role and hence solvent needs to be mixed at regular interval to maintain constant pH value of dampening solution.
5) Quality of paper is also important as surface roughness/whiteness varies for equivalent dimension of paper having different manufacturer.
6) Paper thickness is similar important as more pressure on paper could smudge print area and edge of print could hazy hence it is required to sense paper thickness and adjust blanket cylinder to impression cylinder clearance accordingly.
7) Same as above.
8) Generally, powder sprayed onto the printed paper at last to dry ink at a faster rate so that it could not create mirror image on the next page within delivery pile. It is required to sense onto the printed paper which area require more powder to dry according to ink depth and which require less so that wastage of powder can be minimized.
9) Adjustment of heat within heat chamber is also require proper control and it requires to sense if there is more ink on the printing job so that actuation of heat more for heavy image jobs and less for printing having only text matters.

Once we control all the above points then printing machine would be more intelligent and it will reduce involvement of human decision by which we can conserve energy as well as a good amount of paper. As we know paper generally produced from wood hence we can conserve more and more greenery by upgrading printing machine self-intelligent.